

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 30 MAY 2006

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Applicant's or agent's file reference P/63972/GPTU77	<b>FOR FURTHER ACTION</b>	
		See Form PCT/IPEA/416
International application No. PCT/EP2005/050795	International filing date (day/month/year) 24.02.2005	Priority date (day/month/year) 05.03.2004
International Patent Classification (IPC) or national classification and IPC INV. H04L29/06		
Applicant MARCONI COMMUNICATIONS LTD et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a.  (*sent to the applicant and to the International Bureau*) a total of 7 sheets, as follows:
    - sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b.  (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
  - Box No. I Basis of the report
  - Box No. II Priority
  - Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - Box No. IV Lack of unity of invention
  - Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - Box No. VI Certain documents cited
  - Box No. VII Certain defects in the international application
  - Box No. VIII Certain observations on the international application

Date of submission of the demand  23.12.2005	Date of completion of this report  29.05.2006
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Erik Fischer Telephone No. +49 89 2399-5795



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## Box No. I Basis of the report

### 1. With regard to the **language**, this report is based on

- the international application in the language in which it was filed
- a translation of the international application into , which is the language of a translation furnished for the purposes of:
  - international search (under Rules 12.3(a) and 23.1(b))
  - publication of the international application (under Rule 12.4(a))
  - international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

### 2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

#### Description, Pages

1, 2, 4, 7-21	as originally filed
3, 5, 6	received on 23.12.2005 with letter of 21.12.2005

#### Claims, Numbers

3-6	as originally filed
1, 2, 7-15	received on 23.12.2005 with letter of 21.12.2005

#### Drawings, Sheets

1/2, 2/2	as originally filed
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- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

### 3. The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

### 4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N) Yes: Claims 1-15

No: Claims

Inventive step (IS) Yes: Claims

No: Claims 1-15

Industrial applicability (IA) Yes: Claims 1-15

No: Claims

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following documents:  
D1: US 2003/046387 A1 (OSHIMA YOSHINOBU ET AL) 6 March 2003 (2003-03-06)  
D2: US 2002/006780 A1 (BJELLAND FRODE ET AL) 17 January 2002 (2002-01-17)
2. The subject matter of **claims 1, 10 and 11**, as far as it can be understood, does not involve an inventive step in the sense of Article 33(3) PCT.  
2.1 Document **D1**, which is considered to represent the closest prior art, discloses the following features of **claim 1** (the references in parentheses applying to this document):  
A telecommunication network (see in particular page 1, paragraph 10, lines 1-4; or figures 1, 5), the network comprising:
  - a) a packet network (e.g. page 1, paragraph 10, lines 1-4; or figure 1);
  - b) a call control agent associated with the packet network, the call control agent being arranged to control at least one communication channel across the packet network (e.g. page 2, paragraph 25, lines 8-14; page 3, paragraph 38, lines 1-10; or figure 5); and
  - c) at least one media gateway associated with the call control agent (e.g. page 2, paragraph 25, lines 8-14; page 3, paragraph 38, lines 1-10; or figure 5),
  - d) the media gateway being arranged to receive and convert signals compatible with a first communication format arriving at the media gateway into signals compatible with a second communication format (e.g. page 2, paragraph 24, lines 1-13; paragraphs 28, 29; or figure 1),
  - e) wherein the media gateway has associated therewith a media streaming unit

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that is arranged to determine whether or not the signals of the first communication format relate to media data (e.g. page 2, paragraph 24, lines 13-19; paragraph 27; paragraph 30; or figure 1).

The telecommunication network defined by claim 1 is distinguished from the network disclosed in document D1 by the following feature:

- f) if there is more than one communications channel, the media streaming unit is further arranged to detect media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and to loop the detected media data back to the correct time slot on one of the communications channels.

The subject matter of claim 1 differs from that disclosed in D1 merely in that a media streaming unit associated with the media gateway is arranged to detect media data that is destined for other communication channels or other timeslots (so called hairpinned calls). However the detection of such hairpinned calls and their re-routing in the network to the correct destination is generally known in the art of telecommunication network engineering. The employment of a media streaming unit for detecting hairpinned calls (or hairpinning) comes consequently within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can be readily contemplated in advance.

Therefore it is considered that no inventive step in the sense of Article 33(3) PCT is involved in including this feature in **claim 1** and claim 1 is thus not allowable because of lack of inventive step.

Remark: The media streaming unit (in the application) performs the same task as the header processing portion (in D1), both entities determine whether or not the signals of a communication format relate to so called media data; that is distinguish media data, e.g. audio data, from so called non-media data, e.g. control information or signalling. Also the call control agent (in the application) performs the same tasks as the gateway control device (in D1), both entities instruct the

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media gateway via media gateway control protocol to perform call handling, for example a call setup. However as both documents relate to a media gateway connecting two networks with different communication formats, e.g. a circuit switched and a packet switched network, such mere differences in naming do not involve an inventive step.

- 2.2 **Independent claim 10** defines a method of operating a media gateway with features d) and e) of claim 1 - see section 2.1 above - where the conversion of signals (i.e. feature d)) is performed under the condition of the determination of media data (positive determination). This is however already disclosed in D1 (e.g. page 2, paragraph 24, lines 13-19; paragraphs 27, 28; paragraph 30; or figure 1); therefore the subject matter of claim 10 does also not involve an inventive step.
- 2.3 **Independent claim 11** defines a media gateway with features d) and e) of claim 1 - see section 2.1 above - and does therefore also not involve an inventive step.
3. **Dependent claims 2-9 and 12-15** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT).
- 3.1 The features of dependent claims 2-7, 9 and 12-15 are already disclosed in documents **D1 and D2** (the references in parentheses applying to this document):
- |              |  |
|--------------|--|
| Claim 2, 12: | D1 e.g. page 2, paragraph 24, lines 13-19; paragraphs 27, 28; paragraph 30; or figure 1                                |
| Claim 3, 13: | D1 e.g. page 1, paragraph 21; page 2, paragraph 23; paragraph 24, lines 13-19; paragraph 27; paragraph 34; or figure 1 |
| Claim 4, 14: | D1 e.g. page 2, paragraphs 24, 29; or figure 1   |
| Claim 5, 15: | D1 e.g. page 1, paragraph 21; page 2, paragraph 23; paragraph 24, lines 13-19; paragraph 34; or figure 5               |
| Claim 6:     | D1 e.g. page 2, paragraph 27; or figure 1  |
| Claim 7:     | D1 e.g. page 3, paragraphs 36, 37; or figure 1   |

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Claim 9: **D2** e.g. page 5, paragraphs 51-56; or figure 1

- 3.2 The features of dependent claim 8 refer to further details of the apparatus, which the skilled person would regard as normal design options. Claim 8 does therefore not involve an inventive step in the sense of Article 33(3) PCT.

**Re Item VII**

**Certain defects in the international application**

1. Independent claims 1, 10 and 11 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the closest prior art being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

**Re Item VIII**

**Certain observations on the international application**

1. The application does not meet the requirements of Article 6 PCT in the following respects:
  - 1.1 Claims 1, 2 and 7 are not clear: The terms "packetized network" and "packetized scheme" are not clear.
  - 1.2 Claims 1, 2, 11 and 12 are not clear: Claim 2 (claim 12) defines that "the media streaming unit (...) is arranged to convert signals (...) that are compatible with the first communication format into signals compatible with the second communication format", whereas claim 1 (claim 11), on which claim 2 (claim 12) is dependent on, defines the same feature as a feature of the media gateway: "the media gateway being arranged to (...) convert signals compatible with a first communication format (...) into signals compatible with a second communication format". Therefore it is not

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clear how both features relate to each other.

- 1.4 Claims 1-5 and 9-15 are not clear: The term "media data" is a vague term and thus not clear.
- 1.5 Claims 3, 5, 13 and 15 are not clear: The term "non-media data" is a vague term and thus not clear.
- 1.6 Claim 9 is not clear: The term "call records detail" is not supported by the description and is therefore not clear. The description only mentions a "call detail record".
- 1.7 Claims 13 and 15 are not concise: Both claims comprise the same additional features and claim 15 is dependent on claim 13, thus their scope overlaps.

According to a first aspect of the present invention a telecommunication network comprising a packetized network, a call control agent associated with the packetized network, the call control agent being arranged to control at least one communication channel across the packetized network, and at least one media gateway associated with the call control agent, the media gateway being arranged to receive and convert signals compatible with a first communication format arriving at the media gateway into signals compatible with a second communication format, wherein the media gateway has associated therewith a media streaming unit that is arranged to determine whether or not the signals of the first communication format relate to media data and if there is more than one communications channel, the media streaming unit (52) is further arranged to detect media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and to loop the detected media data back to the correct time slot on one of the communications channels.

In this manner, the media gateway of the invention separates its primary function, i.e. the transmission of media data, from the handling of non-media data. This results in an increase in the range of media data packetization periods that the media gateway can process. Furthermore, separation of the media and non-media type data by the media gateway results in an increase in speed of operation of the telecommunication network. That is, as will become clear from the description of the invention, the rate of Busy Hour Call Attempts (BHCA) achieved by the media gateway can be increased by decoupling the handling of media data from non-media data in the media gateway.

Furthermore, as the media gateway is primarily focussed on the transportation of media data, jitter effects associated with the transfer of media data over a

The first communication format may be pulse code modulation and the second communication format may be a packetized scheme, for example Ethernet or an internet protocol scheme.

- 5 The media streaming unit may be a field programmable gate array.

- The determination of whether or not the signals of the first communication format relate to media data or whether or not the signals of the second communication format relate to media data may be determined from a call 10 records detail associated with the signals.

- According to a second aspect of the present invention, a method of operating a media gateway comprises determining whether or not the signals of a first communication format relate to media data and, dependent on a positive 15 determination, converting such signals into signals compatible with a second communication format, whereas if there is more than one communications channel providing signals to the media gateway, the media streaming unit (52) detects media data from the communications channels that are destined for other communications channels or other timeslots on the same communications 20 channel and loops the detected media data back to the correct time slot on one of the communications channels.

- According to a third aspect of the present invention, a media gateway, for connection of a first network to a second network, is arranged to receive and 25 convert signals compatible with a first communication format arriving at the media gateway into signals compatible with a second communication format, wherein the media gateway has associated therewith a media streaming unit that is arranged to determine whether or not the signals of the first communication format relate to media data and if there is more than one communications channel providing signals to the media gateway, the media 30

streaming unit (52) is further arranged to detect media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and to loop the detected media data back to the correct time slot on one of the communications channels.

Preferably, the media streaming unit, dependent on a positive determination, may be arranged to convert signals that relate to media data and which are compatible with the first communication format into signals compatible with the second communication format for onward transmission on a communication channel of the second network. Furthermore, the media streaming unit, dependent on a negative determination, may be arranged to forward signals that relate to non-media data to a gateway core processor associated with the media gateway.

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The media streaming unit may be arranged to determine whether or not the signals of the second communication format relate to media data and, dependent on a positive determination, to convert signals that relate to media data and which are compatible with the second communication format into signal compatible with the first communication format for onward transmission on a communication channel of the first network. Also, the media streaming unit, dependent on a negative determination, may be arranged to forward signals which relate to non-media data to a gateway core processor associated with the media gateway.

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The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

CLAIMS

1. A telecommunication network comprising:
  - a packetized network;
  - a call control agent associated with the packetized network, the call control agent being arranged to control at least one communication channel across the packetized network; and
  - at least one media gateway (40, 76, 98) associated with the call control agent (74, 94), the media gateway (40, 76, 98) being arranged to receive and convert signals compatible with a first communication format arriving at the media gateway (40, 76, 98) into signals compatible with a second communication format,
    - wherein the media gateway has associated therewith a media streaming unit (52) that is arranged to determine whether or not the signals of the first communication format relate to media data and if there is more than one communications channel, the media streaming unit (52) is further arranged to detect media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and to loop the detected media data back to the correct time slot on one of the communications channels.
2. A telecommunication network, as claimed in Claim 1, wherein the media streaming unit (52), dependent on a positive determination, is arranged to convert signals that relate to media data and that are compatible with the first communication format into signals compatible with the second communication format for onward transmission on a communication channel across the packetized network.

7. A telecommunication network, as claimed in any of claims 1 to 6, wherein the second communication format is a packetized scheme.
8. A telecommunication network, as claimed in any preceding claim, wherein the media streaming unit (52) is a field programmable gate array.
9. A telecommunication network, as claimed in any preceding claim, wherein determination of whether or not the signals of the first communication format relate to media data or whether or not the signals of the second communication format relate to media data is determined from a call records detail associated with the signals.
10. A method of operating a media gateway (40, 76, 98), comprising determining whether or not the signals of a first communication format relate to media data and, dependent on a positive determination, converting such signals into signals compatible with a second communication format, whereas if there is more than one communications channel providing signals to the media gateway, the media streaming unit (52) detects media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and loops the detected media data back to the correct time slot on one of the communications channels.

11. A media gateway (40, 76, 98) for connection of a first network to a second network, the media gateway (40, 76, 98) being arranged to receive and convert signals compatible with a first communication format arriving at the media gateway (40, 76, 98) into signals compatible with a second communication format, wherein the media gateway (40, 76, 98) has associated therewith a media streaming unit (52) that is arranged to determine whether or not the signals of the first communication format relate to media data and if there is more than one communications channel providing signals to the media gateway, the media streaming unit (52) is further arranged to detect media data from the communications channels that are destined for other communications channels or other timeslots on the same communications channel and to loop the detected media data back to the correct time slot on one of the communications channels.
12. A media gateway (40, 76, 98), as claimed in Claim 11, wherein the media streaming unit (52), dependent on a positive determination, is arranged to convert signals that relate to media data and which are compatible with the first communication format into signals compatible with the second communication format for onward transmission on a communication channel of the second network.
13. A media gateway (40, 76, 98), as claimed in Claim 11, wherein the media streaming unit (52), dependent on a negative determination, is arranged to

forward signals that relate to non-media data to a gateway core processor associated with the media gateway (40, 76, 98).

14. A media gateway (40, 76, 98), as claimed in any of Claims 11 to 13, wherein the media streaming unit (52) is arranged to determine whether or not the signals of the second communication format relate to media data and, dependent on a positive determination, to convert signals that relate to media data and which are compatible with the second communication format into signal compatible with the first communication format for onward transmission on a communication channel of the first network.
15. A media gateway (40, 76, 98), as claimed in any of Claims 11 to 13, wherein the media streaming unit (52), dependent on a negative determination, is arranged to forward signals which relate to non-media data to a gateway core processor associated with the media gateway (40, 76, 98).